MUSEUM ALLIANCE

QUARTERLY

LOS ANGELES COUNTY MUSEUM OF NATURAL HISTORY
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Kudos

The first presentation of the Arnold Guyot Memorial Award of the National Geographic Society has been made to the Los Angeles County Museum of Natural History.

"For outstanding scientific work and specifically in support of investigations of Mesozoic and Tertiary fossil vertebrates in Baja California, Mexico.

Herbert Friedmann, Director Los Angeles County Museum of Natural History. **William J. Morris,** Research Associate Los Angeles County Museum of Natural History and Professor of Geology Occidental College Project Supervisor"

The award was a contribution of $2,000 toward the costs of the 1968 field operations under Dr. Morris.

A Letter to the Membership

With the general trend toward shorter working hours and of replacement of personnel by machines in many occupations, it becomes increasingly evident that greater numbers of people are going to have more and more unregulated time on their hands. This prospect can be either good or bad, depending on how individuals use their new leisure. If they turn it to advantage by cultivating hobby interests, to say nothing of more serious studies, it should be good; if they do nothing constructive with it, either intellectually or socially, they may find themselves bored and restive, and this would certainly be bad and could lead to worse. The opportunity for good is so great that it prompts me to write a few words about the hobbyist, the nonprofessional, the person who does something because it interests him with no pay check or economic inducement to lure him on; in other words, the amateur.

The word amateur has fallen into an undeserved ill repute, and it should be restored to its former meaning. The word itself is a Gallicized version of a Latin word meaning "one who loves". An amateur botanist is one who loves botany or any part of that study — flowers, trees, even applications such as horticulture; an amateur mineralogist is one who loves to look at and to study minerals. No one can find anything wrong in such attitudes, but yet in our present climate of specialization and professionalism the word amateur has usually come to imply "not quite competent". This is a great pity and a great mistake. Charles Darwin never held a salaried position in his life; he was an amateur in the real sense of the word, and it would be hard to find any professional (salaried) biologist whose life work was more productive and more significant. A very large proportion of our present knowledge of the fauna and flora of the world is due to the efforts of amateurs. In Africa and Asia the bulk of the specimens and of the observation of mammals, birds, and other creatures has been amassed by military and civil officers who devoted their free hours to these studies year after year with never abating enthusiasm. Similarly planters, missionaries, and engineers, living for long or for short periods in out of the way and little known regions filled their spare time with self- renewing and sustainingly rewarding studies of animals, of plants, of rocks and minerals, of native peoples, of archeology and of local history and languages. The debt the civilized world owes to these amateurs is very great indeed.

By virtue of its connotation of "one who loves" the true amateur has a genuine respect for his material and would never knowingly damage it, and because of his sympathetic understanding of other areas of comparable interest would not destroy or impair the materials that others may wish to study. Vandalism does occur, even with unfortunate frequency, but it is unfair to equate amateurs with vandals. The true lovers of a subject are the first to feel the sense of loss and even of outrage when senseless and needless destruction takes place in related fields as well as in their own. The scientific specialist who sees his material wantonly mutilated may not always be in a position to distinguish the good from the bad individuals, and may inadvertently cause the former to seem guilty of the acts of the latter, and since we are all liable to such error, we should be understanding and patient in the face of unintentionally inclusive statements.

The amateur, in the true sense of the word, is someone whom the Museum can only applaud and admire; we "speak the same language", we have the same sense of values, the same interest in things, whether they be minerals or mammals, boulders or butterflies. A greater, more accurate and deeper knowledge of the multitude of things that make up our world, and how they all interact is our common interest. In the coming years of greater leisure the Museum should be an ever more important focal point for the host of dedicated amateurs as well as their less numerous, but full-time, professional companions in the search for truth about the world we live in.

from **Herbert Friedmann,** Director,
Los Angeles County Museum of
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OF NATURAL HISTORY
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The First Automobile Into Yosemite **4**

Honey-Ants, The Industrious Socialites **14**

The Museum— An Educational Happening **19**

People for Planets **26**

Book Review **30**

Spotlight **31**

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The First Auto into Yosemite

James M. Zordich
Associate Curator
Industrial Technology section

This summer more people will be traveling to Yosemite National Park than ever before. To get there, most visitors will take either cars or busses. Not only does this mean that there will be overcrowding, but that smog and pollution will also increase. It would seem strange not to see an automobile in Yosemite, but there was a time when this was the rule, not the exception. At one point in the history of Yosemite, the automobile was a strange and rare occurrence.

On Friday evening, June 23, 1900 the automobile that was to become famous for being the first machine of its type to enter Yosemite, arrived at the town of Raymond, the recognized starting point for all journeys into Yosemite. At this time, the only way of reaching the valley was by horse-drawn stages which had been operated for over thirty years by the Washburn Brothers. As you might well imagine, quite a stir developed upon the arrival of this automobile at Raymond. At this time, the automobile was a relatively new creation and would and did create a sensation wherever it might go.

The car that was used to enter Yosemite was a brand new Locomobile Steam Car produced in 1900 by the Locomobile Company of Bridgeport, Connecticut. The Locomobile Company was one of the first major manufacturers of automobiles in the United States at the turn of the century. The trip was made in a standard production model as delivered from the factory. To be

more specific, the car was a Style No. 2 which had a carrying capacity of two persons. It weighed 640 pounds when it was empty and 850 pounds when the gasoline and water tanks were filled. Of course, the car in our story weighed more due to the extra supplies that were carried such as oil, water, gasoline, tires, and tools. A two cylinder, 10 horsepower, steam engine which operated at 150 pounds of pressure powered the car. On the level it could run at a speed of one to 40 miles per hour.

It is important to recognize that this car was not specially designed for the trip, but was rather a car that could be purchased from any dealer in the United States. The owner of this particular car, Mr. Oliver Lippincott, like many automobile owners of the time, was the adventurous type and wished to go where no other automobile or driver had gone before.

Mr. Lippincott was accompanied on this journey by Mr. Edward Russell who, for many years with his brothers, owned the Russell Brothers Bicycle Shop in Los Angeles around the turn of the century.

The trip got underway at 6:45 Saturday morning, June 24, 1900, this because of the bad reputation automobiles had for scaring horses. By leaving at this hour, the automobile would be out on the road before any of the stages. For the rest of the journey, I shall quote directly from a report written by Mr. Lippincott.

At 6:45 we left Raymond and proceeded for eight miles without any trouble, although we met all kinds of teams, but were just ascending a steep grade when, on rounding a turn, we came suddenly upon a four-horse freighter. I immediately stopped the locomobile, but the freighter was not under such perfect control, the machine being evidently as new to the wild-eyed driver as to the rearing and plunging horses. As soon as the man realized what the machine was meant for his eyes sunk back into their sockets and he yelled:

Traveling by automobile on the floor of Yosemite Valley in 1900.

"What in ——— ——— do you want to bring such a nuisance up into this country for? You city people, with your contrivances are always making trouble."

I silently alighted, disentangled his lines, which had become slightly mixed, said a few mollifying words, and my irate friend and the still excited horses watched the locomobile draw up the steep grade at the rate of ten miles an hour. Now a four-horse stage makes the same grade at but three miles an hour, and the freighter, amazed and fascinated by the sight, held his team and watched us until we disappeared from sight.

At the Grub Gulch we made our first stop, renewing our water supply for steam. This is a typical California mining settlement, and in the early days bore the reputation of being a place where a fellow could always rake up enough dust for grub, hence the name. When the locomobile came puffing up the dusty road the hostler left his barn, and the little woman who sells cool drinks to dusty-throated tourists called to her husband to "Come out quick and see something which looks like two bicycles hitched together with a seat in the middle." People lined up along both sides of the road in front of the postoffice to survey us, and one old woman still in her blue kitchen apron, said: "Oh, Abe, the world's coming to an end, sure, when they begin to make things like that."

I let them have a good look at the machinery, entertaining them for about three minutes, when we resumed our journey to Ahwahnee, the lunch station, without further incident. There we had to await the outcoming stage from Wawona. It had taken us exactly two hours to cover the road from Raymond to Ahwahnee, and from Ahwahnee to Wawona it took us three hours and eighteen minutes more.

Just beyond Ahwahnee, comes the longest, hardest climb on the whole Yosemite route, excepting, perhaps, Inspiration Point, coming out of the valley. This grade of nine miles, which it takes the stage coach three hours at best to make, with four sturdy horses, was climbed by the locomobile in less than an hour. The grade averages 10 per cent and seems never ending to the weary Yosemite traveler in the stage, as it is along the hottest part of the road. In the locomobile we found it quite cool and enjoyable, although I am, perhaps, not exactly the build of man calculated to go unscathed in the fierce heat of the sun along an almost treeless mountain side. Luckily our machine went fast enough to create a breeze of its own which tempered the air. Our actual run-

This picture of Mr. Lippincott and the Locomobile at Glacier Point provides a good study of the first automobile to travel into Yosemite.

At Wawona, this fallen tree was a major tourist attraction. What a thrill to have your picture taken in the stage mounted on the log. It was to be expected that where a stage could go, an automobile could, also.

Another tourist attraction in Yosemite was the Wawona Tunnel Tree. Here Mr. Lippincott and the Locomobile have just passed through the tree in a scene that is re-created many times daily in Yosemite today.

Around the turn of the century the road from the floor of Yosemite Valley to the Wawona Hotel and Glacier Point was the rut filled, rock strewn path you see here. It would be many years before this and the other roads in Yosemite would be improved for future automobile traffic. As it was, the roads were almost unbearable for those who traveled by stage.

ning time from Raymond to Wawona was five hours and eighteen minutes. It takes the stage all day to cover this stretch of fourty-four miles.

Wawona received us and our little machine with open arms. Everybody had heard that we were coming, and the porch was crowded with people when we rolled smoothly up to the platform without a rumble, and jumped lightly out, cool and comfortable, with no crooks in our backs from jolting over the ruts in the road. Washburn Brothers were frankly interested in the machine and the trip, and the ladies were all delighted with the possibilities of revolution in mountain travel suggested by our modest conveyance, of which they were given a foretaste by taking seats in turn for a ride around the pretty circular drive in front of the hotel.

The thirty-mile run from Wawona to the Yosemite was made in exactly three hours, the little engine dashing down the curves of Inspiration Point. At the entrance to the valley we came upon three Indians who had been fishing, and had only time to notice that one of them held his string of fish suspended in midair, wildly gesticulating to his companions. Probably the first stage which Henry Washburn brought into the valley some thirty years ago seemed just as strange a sight.

I have been charged with keeping the roads of the valley warm during the whole of my stay. Lady Woolsley was the locomobile's first guest, and the first woman who had the honor of riding a locomobile in the Yosemite. There were some advantages and some disadvantages connected with the propulsion of the machine amid the wilds of nature. At night in the valley the mere sight of the locomobile's headlights and the sound of its shrill electric bell, were sufficient to secure it right of way of every other vehicle, for horses were willing to jump over the bank or climb a tree to make way for us. The records of speed made by the little box on wheels were quoted at many a camp-fire. The remarks of the Yosemite stage drivers, who one and all looked askance at this new fangled method of traveling were sometimes ludicrous. One of them asked me where I kept my hay, and another declared that he wouldn't go steering that thing without a whip.

Henry Washburn, superintendent of the Yosemite Stage and Turnpike Company, who has made the handling of travel into the valley his life work, took a flying trip around the valley in the machine and was so interested in its movement that he afterward declared he hardly knew where he had been. He wanted to make further trial of it, and proposed to me to take it to Glacier point over a road which is a steady climb for thirty miles to an altitude of over 7500 feet. This trip Mr. Washburn and Russell accomplished in five hours, but they did not reach the little hotel on the summit until long after dark, as they started out late in the afternoon. The Automobubble Party, as it is now recorded in the register at Glacier point, anxiously awaited the arrival of the little box as it was growing late and the precipices along the road were not the kind one would like to drop over accidentally. When the anxiety had reached its height, somewhere off in the darkness the sharp ring of the electric bell was heard, and soon the first locomobile in the world to climb such a height was beside the porch. The dining-room's doors flew open and the whole population of Glacier point rushed out to receive the travelers. There was good cheer within and toasts were drunk to W. H. Washburn, introducer of the first stage into the Yosemite, and to Oliver Lippincott, the first locomotive driver.

Nothing would do the next morning but that the locomobile must go out on the overhanging rock where only the most fearless and level-headed have ever dared to stand. The little machine was rolled to the point, and then everyone paused, looking at the machine and then at the rock. The general opinion was that it could not be done.

A. H. Washburn said nothing, but mounted the rock himself with a firm step and took observations, then turning to the crowd, said from his elevated position:

"Now, I am going to show you that it can be done, too."

He ordered one of the guides to bring him two stout ropes and some logs of wood; then called to his assistance the stout arms and trained muscles of "Babe" Burnett, Stanford's next year football captain, who was one of the Automobubble party. Together with the other men of the party they succeeded in dragging the locomobile, only weighing 650 pounds, over the mound of rocks, nearer and nearer the edge of the cliff. The women assembled on the rocks, and buried their heads in their hands, horrified at the sight. I remember looking up once. There was the overhanging rock, which is fairly suspended above the valley, excepting for one little corner, while below yawned an abyss of over 3500 feet. At the very edge of this stood the reckless guide, Walter Henesley, with one of his heels projecting over the valley, tugging away at the locomobile, which was inclined at such an angle that it seemed ready to roll over at any moment. Two inches less space and it would have gone plunging down into the valley. On the other side, Washburn and Burnett, both with ropes tied about their waists, sure to go with it if it should start; while the others were lifting or bracing it in equally perilous positions. I firmly believe that if the machine had gone over every man of the party would have gone with it. At last it was out in a firm position, and we grouped ourselves around it, fairly hanging on with tooth and nail, while the camera was adjusted. No picture was ever so long in being taken. I was sure I felt the rock shaking under me.

As we sat out on that cliff, on the very top of the world, as it seemed, looking at the people and then at the gigantic mountains, I had a realizing sense of what a very small thing man is, but my respect for my race grew as I reflected upon the wonders it can accomplish, scaling such heights without visible effort and merely by the aid of a little gasoline, some steam and inventive genius. The unassuming little machine on the edge of the cliff would probably inaugurate a new era in the mode of conveyance into the Yosemite. It was simply following out the laws of evolution, and the product of a higher civilization. But would not modern ideas and modern inventions, intruding into the heart of primeval nature, rob it of much of its charm? Yet there is only one Yosemite, I reasoned, now inaccessible to the majority of people, and if modern invention can bring it closer to the people the result must be beneficial. Some of the charm of western life must go. The stage driver, with his six horses and coach, can ill be spared, but cleanliness and comfort will be better subserved by swifter modes of travel. Whatever the new style of conveyance, it cannot detract from the sublimity of the great valley or lessen the majesty of the eternal hills.

There are many thrills available to the adventurous, but none so exhilarating as to stand in an automobile at Glacier Point in 1900. Fortunately, today, a fence at Glacier Point prevents a recreation of this scene.

HONEY ANTS

the Industrious Socialites

by **Roy R. Snelling**

Ants have long aroused the curiosity and admiration of human observers who have been intrigued by their industrious behavior and their remarkable social organization. It was Solomon who is credited with having first commented on the propensity of ants for storing food against future famine periods. The observations of Solomon lost credence during Medieval times, as Europeans knew of no such activities among the ants of their region. Eventually, however, astute observers, traveling in the Near East, were able to verify that certain ants truly stored seeds in their nests.

In 1832 an even more remarkable fact about ants was published by Pablo de Llave. He reported that in Mexico there occurred a peculiar species of ant, which he named **Formica melligera,** that actually stored honey! Llave's account excited the curiosity of European entomologists who could hardly believe such a strange thing. Specimens of a honey-ant, as they are now called, finally reached the hands of Wesmael, a Belgian entomologist. Wesmael's specimens were brought from Mexico by Baron de Normann, who, unfortunately, presented his observations on these ants in an imaginative way that confused matters for many years. Ensuing years saw the publication of several notes on honey-ants; these were all fanciful flights of imagination, mostly based on hearsay and inaccurate observations.

All accounts of the habits of these ants, exaggerated and fanciful though they were, agreed on one point; that certain individuals in the colonies had enormously swollen abdomens which contained a sweet fluid very much like honey. These early writers assumed that the ants actually created the honey from food substances fed to them. Some of the accounts claimed further that the ants also manufactured storage receptacles to receive the honey.

It was not until 1882 that an accurate account of these most remarkable ants appeared when H. C. McCook published his celebrated book, "The Honey Ants of the Garden of the Gods and the Occident Ants of the American Plains." McCook, after much time spent patiently observing these ants clarified many of the mysteries surrounding them.

According to McCook, foraging workers gather the sweet, watery secretion produced at night by the galls on shin oaks growing in the Garden of the Gods near Colorado Springs, Colorado. This is carried to the nest in their crops and is there transferred to other individuals in the colony for purposes of storage. These recipients are called "repletes" and they store the fluid in their crops. As the crop expands, the other organs in the abdomen are pushed toward the rear. At the same time, due to the increased bulk of the abdomen, the ant finds walking more and more difficult, so difficult, in fact, that the ants are forced to hang upside down from their chamber ceilings if they are to move at all. Still more sweet nectar is fed to them and the abdomen continues to expand and the ant is limited to hanging from the ceiling. By this time the abdomen is so enormously distended that it may, in some species, attain the size of a pea or a small grape.

The honey-ants are a strictly North American group and are restricted to desert and semi-desert areas. Species extend from western Kansas and Texas westward to the Pacific Coast and northward to Oregon and Idaho; southward they range through the Mexican highlands as far as the State of Puebla. Many species have evolved over this vast territory; more than twenty have been recognized, although some of these have not yet been formally named.

The great American authority on ants, William Morton Wheeler, devoted a considerable amount of time to studying these ants in their natural environments and added to our knowledge of their classification, distribution and behavior. In the main, his observations corroborated those of McCook, but Wheeler, with a vast comparative knowledge of many species was led to postulate some new ideas.

The honey-ants, according to his interpretations, consisted of two major groups; one group was centered around the species **melliger** and the other around **mexicanus,** all the species being assigned to the single genus **Myrmecocystus.** The first group included all the species with red head and thorax and a black abdomen. In the second group were placed all the completely yellow species. Although the second group was quite homogeneous, the first included a wide range of forms. Since Wheeler had not been able to find the repletes with swollen abdomens in any nests of certain of these forms, he postulated that some are completely or largely insectivorous and never form repletes. On the other hand, other forms normally feed almost entirely on the sweet exudates of plants and other insects and in the colonies of these species repletes were to be expected. According to Wheeler's ideas, repletes form as a response to arid desert conditions and serve as food storehouses during the hot summer months when the available nectar supply is severely limited.

However, W. S. Creighton, in 1950, disagreed with this and commented that "it appears that the production of repletes is not a response to the rigors

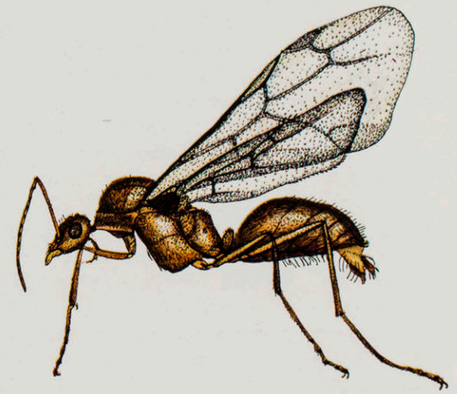


PLATE 1
Castes of **Myrmecocystus mexicanus.** From top to bottom: minor worker, major worker, male, female. Figures by Ruth Ann DeNicola.

PLATE 2

Nest entrances of honey-ants. Top, **Myrmecocystus melliger;** middle, **Myrmecocystus navajo;** bottom, **Myrmecocystus mexicanus.**

Bottom photo by C. J. Stage

of desert life but a phenomenon which results when a xerophilous species adapts itself to a less rigorous environment." A telling point in Creighton's favor was the fact that no repletes had yet been found in those species which inhabit the very dry desert regions. Creighton expressed the view, however, that these species were probably not incapable of producing repletes, that they merely lacked the opportunity to do so.

My own observations on these ants have tended to confirm the opinions of Creighton. Moreover, I have been able to find repletes in the colonies of species found in the most arid desert regions.

Two factors seem to be necessary for replete production: (1) a large food supply available over a period of several weeks and (2) callow (recently emerged) workers in the nest. The callow workers which have just emerged from pupation are the only individuals whose integuments are sufficiently pliable to be stretched to the replete condition.

The fluid stored by these ants is usually unmodified plant sugars and is quite thin. It consists largely of a fructose sugar solution. In taste it is fairly sweet, but has a slightly acrid flavor imparted by the formic acid contained in the body of the ant. When exposed to air it eventually dries to a sticky, brownish mass, without evidence of crystallization. Honey-ants were well-known to the Indians of the Southwest and were prized items of food.

Not all repletes serve as storage receptacles for sweet nectar, however. Some are used to store water, while others contain a somewhat thick whitish fluid with a considerable amount of sediment. No chemical tests have yet been made on this fluid and sediment, but, judging by taste, it seems to consist largely of insect body fluids.

The fluids apparently are largely stored for use by the adult members of the colony, little or none being fed to the larvae. Larval food consists mainly if not entirely, of dead insects brought to them by the foraging ants. From time to time I have maintained colonies in the laboratory and been able to observe something of the food habits of these ants. When the available food supply is limited to a honey-water solution, it is eagerly accepted by the workers, and if callows are present, repletes are quickly developed to store any surplus. However, in such colonies, I have observed that the larvae are rarely fed by the workers and that they fail to mature; the larvae eventually die. On the other hand, if dead insects alone are supplied to the colony, these are placed with the larvae which feed directly on the fragments. Few repletes are formed under these circumstances, but those that are contain an opaque, whitish fluid. The larvae in colonies fed in this manner mature rapidly and normally. In colonies supplied with both honey-water and dead insects, larvae develop normally and the usual repletes are produced.

The nests of honey-ants are found in a wide variety of situations. Some species nest in fine, loose sand; others in coarse, compact sand; still others nest on rocky slopes. Although they nest in almost all types of desert terrain, most species are highly selective and will nest only in an environment of a particular type. Thus, a species which normally nests in fine, loose sand will not be found on rocky slopes. The entrances to the nests are marked by very conspicuous crater-like mounds (plate 2, middle and bottom) or they may be merely a simple hole in the ground (plate 2, top).

The subterranean configuration plan of the nest is determined somewhat by the nature of the nesting substrate. Species which nest on level terrain commonly dig their nests straight down, with a large, vertical central tunnel and with lateral galleries at irregular intervals. Such nests may extend to a considerable depth. The record depth to date is of a colony excavated by R. H. Crandall to a depth of sixteen feet! Nests on rocky slopes do not extend vertically to such depths and the main orientation is along a horizontal, rather than vertical, plane. In these nests, too, connecting galleries are often winding, owing to the rocks present, and chambers are very irregularly placed.

Although McCook pictured replete chambers with high vaulted ceilings, such chambers have never been observed by subsequent workers. Normally, repletes hanging from the roof of the chamber are barely clear of the floor (plate 3,). They may be so close, in fact that it is not possible for a large worker to pass below the distended abdomen of the replete.

The usual activities within a honey-ant colony are not greatly different from those often depicted as "typical" ants. Following the mating flight, which usually takes place following a warm rain during the spring or summer months, the newly fertilized female descends to the ground and rubs off her wings. The wings have a predetermined breakline near the base and are shed with ease. Males normally die shortly after mating. The female then searches for a suitable location and excavates a simple vertical shaft in the soil, to a depth of from six to eighteen inches. At the bottom of this shaft a small chamber is prepared to one side and here, a few days later, she begins to lay eggs. The number of eggs may vary from half a dozen to nearly two dozen. From this time, the female never leaves the nest. For food she subsists on the energy supplied by the deterioration of the now useless flight muscles and on fatty tissue.

The first larvae are fed and cleaned by the female for several weeks. When mature the larvae spin white pupal cases, or cocoons, and within these they are transformed through the pupal stage, into adult workers. When they are ready to emerge, the ants chew off the top of the cocoon and crawl out, frequently with the aid of the female. Newly emerged adults are very pale and remain within the nest for up to two weeks, until the soft integument hardens and the coloring pigments have fully developed. As soon as they are able to do so, the small workers dig up to the surface and begin foraging for food.

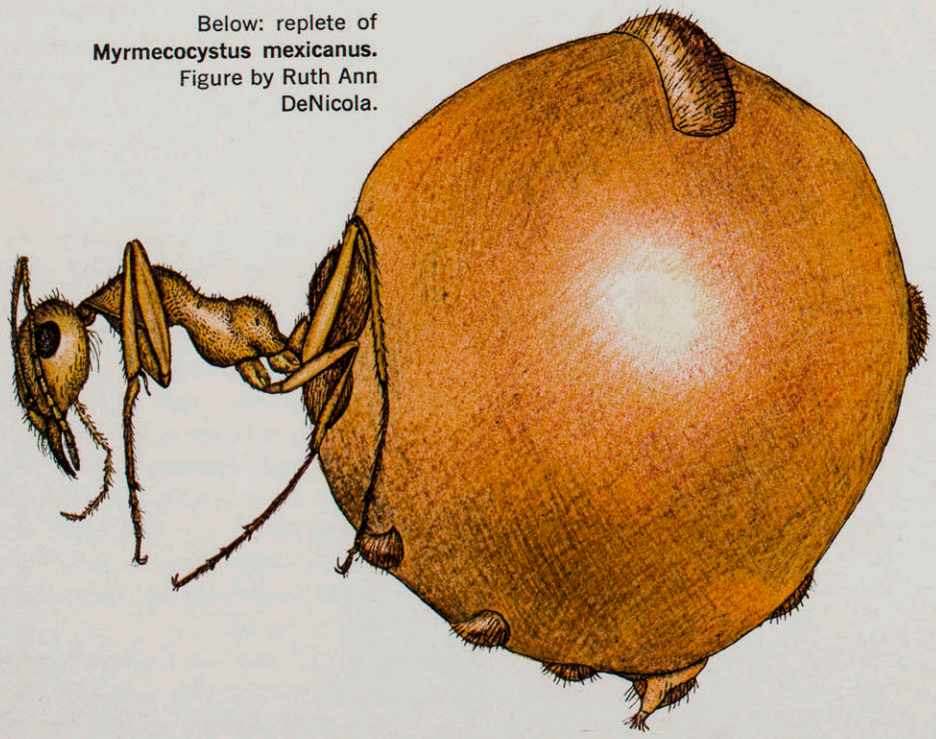
At this time, small insects are especially sought for, in order to provide food for the new larvae, because by now the female has laid more eggs. When this second brood matures, the older workers have begun to forage for nectar, and it is not at all unusual to find developing repletes in such beginning nests. As a rule, by the time a colony has produced a second brood, which is usually larger than the first, the colony is well-established and will probably survive and grow.

About two years after the colony is established it has attained sufficient size and strength so that reproductive

Above, repletes of **Myrmecocystus mexicanus** in replete chamber.

PLATE 3

Below: replete of **Myrmecocystus mexicanus.** Figure by Ruth Ann DeNicola.



forms are produced. The larvae which develop into females are very much larger than those of the neuter workers and consume enormous quantities of food. Hence, they represent a considerable drain on the resources of the colony and only well-developed colonies are capable of sustaining them. The males are much smaller than the females (plate 1), sometimes smaller than the largest workers. Both males and females possess wings. They are often present in a colony several months before a suitable rain occurs, but once conditions are suitable they emerge from the nest in great numbers and immediately fly away. Males seek out the females in the air and mating is consummated in flight.

An interesting structural adaptation of most desert inhabiting ants is the presence of a row of long, curved bristles on the underside of the head and mandibles of the workers. This structure, called a psammophore, forms a sort of basket by which the ants are able to carry a load of fine-grained sand during excavation. The honey-ants possess a poorly developed psammophore, but have evolved another means of accomplishing the same end. In these ants the maxillary palpi (antenna-like structures on the mouth parts) are greatly elongated and, when folded back along the underside of the head and curled forward in front of the front legs, form a very efficient adjunct to the poorly developed psammophore. The segments of the palpi are provided with coarse bristles to further aid in carrying sand.

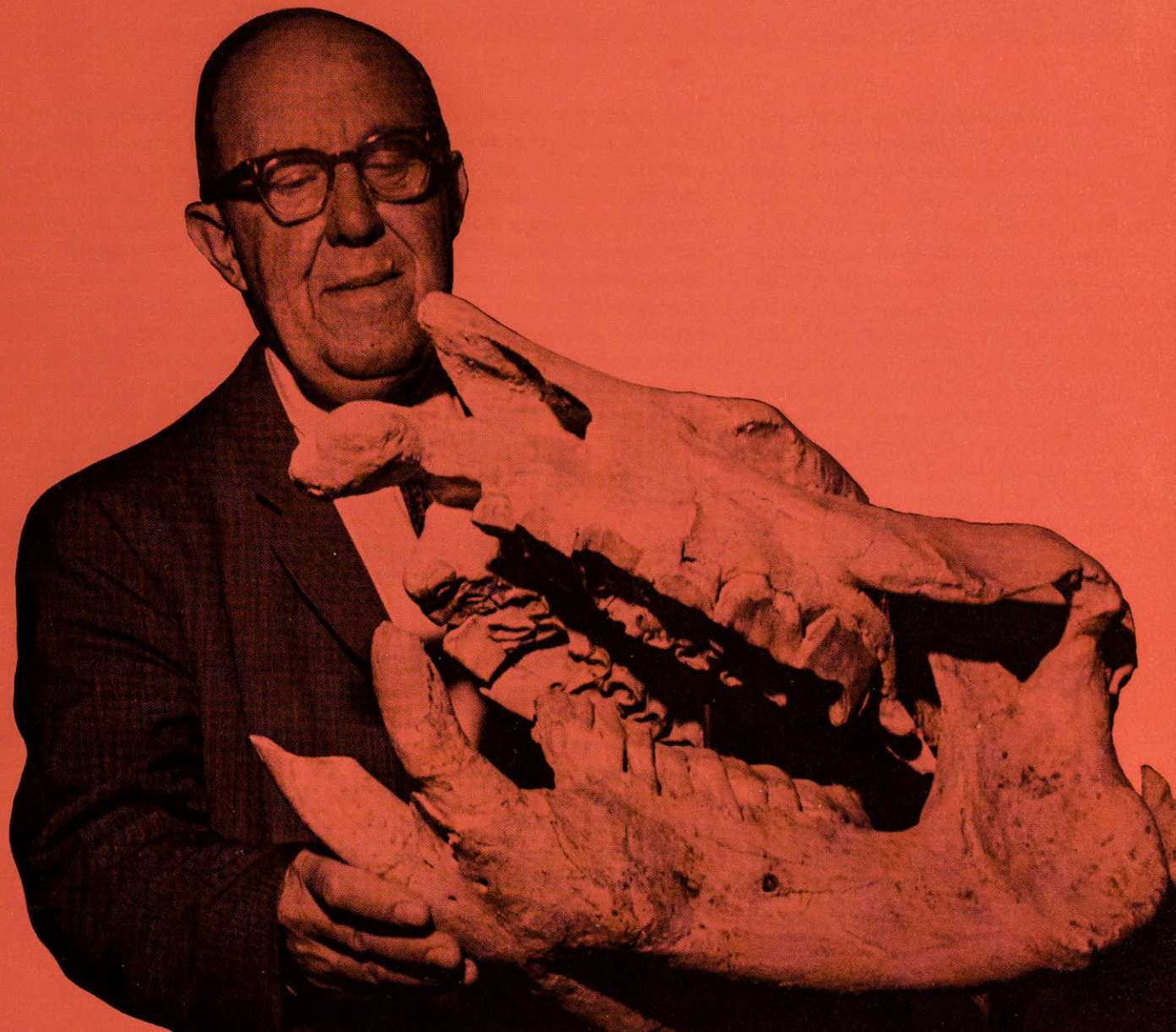
The honey-ants are but one of the many kinds of ants which have developed a successful existence in desert areas. In the United States they apparently are the only ants which form true repletes, although semi-repletes are produced in **Prenolepis,** another genus related to **Myrmecocystus.** In Australia true repletes are formed by ants belonging to the genera **Camponotus** and **Melophorus. Camponotus** is found in our desert regions also, but does not produce repletes here, as far as known. **Melophorus** is a genus about equal to **Myrmecocystus** in number of species, and is restricted to Australia. The Aborigines are very fond of the repletes of both ants and dig them up whenever a nest is found.

The Museum an Educational Happening

by **Dr. Herbert Friedmann**

In attempting to describe and to appraise the educational role of museums, I am assuming that what we are interested in considering is the underlying attitude and philosophy of museums as centers of learning at all levels. Many museums, including the one in Los Angeles, have education divisions, especially programmed for working with the schools and with the public as well, and staffed by highly competent and devoted teachers.

Museums that have among their personnel such special education divisions have an advantage over those that do not. This is the case not only in the obvious, direct implementation of the exhibits and the expansion of their label texts into talks by the docents, but also in the education division's assistance in formulating the concepts behind new displays. Before installing a new exhibit of any magnitude or duration, we, in



Before

A male and female Canada Lynx, mounted, without habitat staging.

the Los Angeles County Museum of Natural History, call in our educators to pass on the plans, to advise whether the ideas the curators hope to convey really "come through"; to tell us to how large or how specialized, an audience and of what age group, they may be expected to appeal; to suggest alterations that, in their experience, should improve the scope and the ease of communication of the planned display. This helps immeasurably in the over-all effectiveness of the results, but, important as this is, it does not alter the basic thinking behind museums as purveyors of facts and as stimulators of thoughts. To this basic philosophy we may now turn our attention.

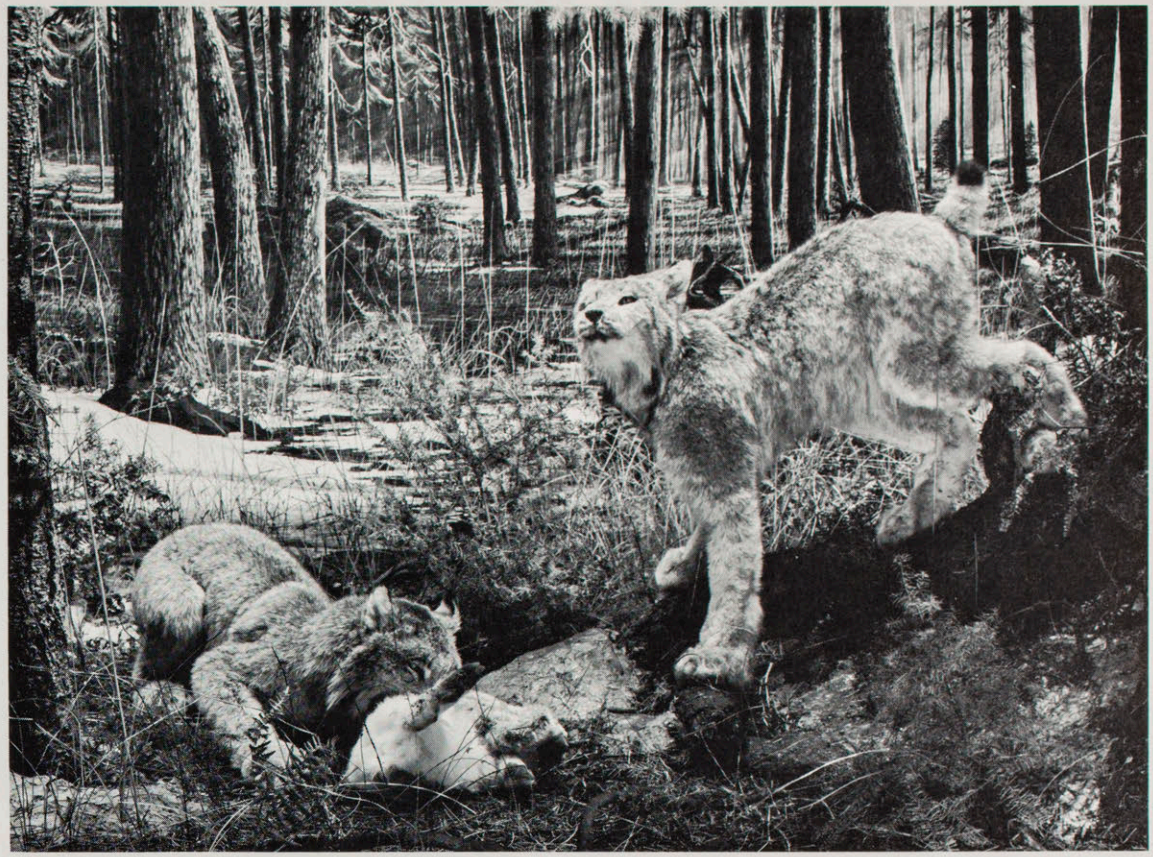
Because of the wide-spread availability, one might almost say the intrusion, of effective mass media of information—still and motion pictures, radio, television, recordings, even telestar—man can live on a world-wide scale and at more than one level simultaneously. The average individual thereby becomes, consciously or subconsciously, more involved, with a greater number of his senses, in more things, more places, and more concepts, than ever before.

One result of this has been to recapture the many-sidedness of involvement that became so largely restricted to words after the invention and dissemination of printing and the rise of literacy. For decades, even centuries afterward, involvement with things unfamiliar or remote, either temporally or spatially, meant knowledge, and knowledge came from reading, and words came to replace the facts or the objects or the ideas they were coined to describe. Now involvement again reaches out to objects and to pictorializations in ever increasing numbers of topics and concepts.

The picturesque, if distorted, language of advertising has drummed into our ears the slogan that one picture is worth a thousand words. Even greater, then should be the value of one real object of which the picture is but a partial image. To make clear the basic difference between the two types of involvement we may distinguish two areas of awareness, the sensible and the intellectual. By the sensible is meant the awareness that comes through the senses, through sight, hearing, smell, taste, and touch. By the intellectual is meant the awareness that results from the mental process of evaluating and of correlating the sensory impressions into ideas and into conclusions and judgments. So long as knowledge stemmed primarily from words it was based on intellectual awareness without the refreshing Antaean-like constant renewal of experience with the sensible world, and it tended to lead to a loss of interest in reality in those touched by it only casually and to a form of pedantry in those who lived by it. By virtue of their possession and meaningful use of real objects the museums become one of the most powerful agencies for the recapture of the essential experience with sensible reality that renews and vitalizes the sphere of intellectual awareness and involvement.

Museum as collections and displays of real objects thus become focal educational centers for this multi-faceted involvement. Schools cannot do this as they do not, and cannot, have large collections of original material. The importance in the involvement of the visitor-spectator with the original, the actual, the genuine is enormous, even if it is difficult to measure objectively. A sin-

After



A male and female Canada Lynx, mounted, set in the habitat staging.

gle example may serve to illustrate the overwhelming value of the original object.

Every year countless thousands of visitors stop to look at the Rosetta Stone in the British Museum. Probably not one in a thousand of them can read the Greek inscriptions and not one in a million the Egyptian hieroglyphics, but they still pause before this famous object, and let their eyes linger and wander, no matter how aimlessly, over it. Almost every large museum in the world has a cast of the Rosetta Stone, but few, if any of them keep it on exhibit any more. Yet, for the scholar for whom the Rosetta Stone is but a page, not of parchment, but of basalt, to be read for its textual contents, the cast is as useful as the original, just as, in other fields of study, the scholar makes use of photostats or xerox copies of pages of rare books not otherwise available to him. However, for the non-specialist, for the layman, for almost all the visitors to the museum, who are not there seeking particular bits of information in answer to particular questions, an exposure to a cast or a copy gives little or no feeling of involvement. Looking at the original, the least informed lay visitor does, however, come to feel that his personal experience has been extended to encompass this famous piece, and he thereby comes to feel that the intellectual triumph of Champollion and his colleagues in first deciphering the mysterious, ancient Egyptian language has become a part of his own personal background of awareness. From that time on whenever he reads about, sees a picture of, or hears someone mention the Rosetta Stone his interest is alerted to a degree far beyond what it would be had he not had that personal confrontation with the one and only original.

What might be termed the coefficient of interest that is so enhanced and heightened by the experience is, in effect, the prime source of the desire to know more, even if the desire may not reach the stage of causing the person to consciously pursue the subject on its own impetus.

Art museums have generally refrained from exhibiting copies of famous paintings or casts of celebrated sculptures, as they realize, or act as if they do, that contact with the genuine article is all important. In the natural sciences the specimens exhibited are equally genuine but are usually not unique as are one-of-a-kind works of art. In the fields covered by the natural history museums many subjects are displayed that the visitor can hardly expect to meet with in real life. Notable among these are displays of mounted specimens of animals, which come from remote corners of the world beyond the expected experience of most viewers, even in today's world of easy and rapid travel.

This leads to an evaluation of the teaching value of such expensive, space and time and work consuming exhibits as habitat groups. The habitat groups give far more than is generally acknowledged by those who look upon them as luxuries. A few years ago I had the opportunity of explaining their value in what may be an unusual type of comparison, but which, I felt, did convince my listeners then. The comparison is with portraits in an art gallery.

When a person had his portrait painted, the production of a recognizable likeness was certainly foremost in his mind, and in that of the artist. The difference between a portrait by a great master and one by a mediocre painter

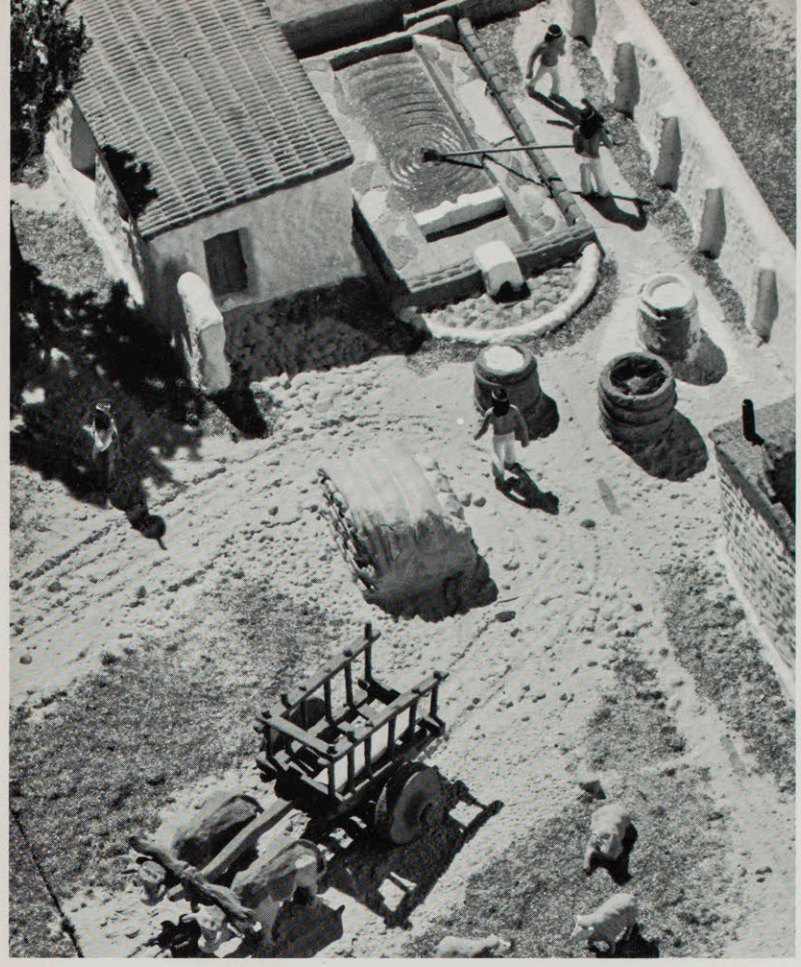
far transcends the mere information it conveys that the sitter had blue eyes or brown hair, or a scar on one cheek. The great painter does not merely represent the sitter; he presents him, and he presents him to us in such a way that we realize him as a personality without conscious effort on our part. In other words, a great portrait tells us much more than a mediocre one, and a large part of the pleasure we experience on looking at a great portrait is this feeling, that without any definite mental exertion on our part we have come to realize another human being more completely, more quickly, less tiringly and more pleasantly, than we otherwise could. If the mere information of physical characters were all that mattered we could hardly get the enjoyment we do from portraits of unknown, and no longer identifiable people, and we would hardly return to take a second look at such paintings. We return because we enjoy this sense of effortless realization, and this, in turn, makes us feel that our ability to apprehend has been quickened, that our mental vitality has somehow been enhanced for the moment even if the moment be a very fleeting one.

In a similar sense, a habitat group, if well done, presents the animal to us, whereas a lone mounted specimen without a proper setting, merely represents its outward appearance, although, in the case of very rare or unusual or seldom seen species, the fact that the mounted specimen is a real one and not a model, does help to give the viewer a feeling of first hand experience with it. But his mental picture of it is, of necessity, limited to its mere outward appearance, and if he knows anything more about it it can only be due to previous or subsequent reading by the viewer, not to the exhibit. Even in the case of well-known kinds of animals the lay visitor may have misleading notions which the "solo" specimen cannot correct. Thus, to many people the lion is commonly thought of in such terms as a fierce denizen of the jungle, and when asked to describe what the word jungle means to them, they are all too apt to say "the dense forest", which, of course is not the true habitat of the animal. I do not mean to imply that every habitat group is the equivalent of a great work of art, but its inherent motivation is along the same lines. Both start out to convey facts about the sitter or the animal, and both, to the degree that they are successful, tell far more than these basic items.

In the case of habitat groups, I have heard teachers state that there, " . . . isn't anything you can say about them." While this is certainly not the whole case, it has a kernel of truth and that is because the groups do the saying for the teacher. The chances are that few museums today would plan to begin large halls of nothing but habitat groups as has been done in the past. A more effective communication is established by a combination of such exhibits with carefully explained thematic displays; but the habitat groups deserve mention in a discussion of the communication and educational impact of museum displays.

Not content with the very real presentation qualities of habitat groups, museums are attempting to still further enhance their effectiveness by the addition of discretely modulated sound effects, animal sounds, sounds typical of early morning or of dusk.

It comes as a surprise to many mu-



Detail of a Museum model: A corner of the San Gabriel Mission yard, showing the hide-curing vat

seum visitors to find that all lions do not sound like their film-sake on M.G.M. productions. The use of sound not merely involves the visitor with another sense in addition to sight, but is entirely natural because of the fact that we live in a world of sound, and that because of its pervasive presence, sound often sets a mood better than does unaided sight.

For the present, at least, the further involvement of smell is generously left to the zoos.

Historical scale-model dioramas serve a similar function although by no means attempting to present a feeling of reality, which their reduced size alone is sufficient to prevent. By reproducing accurately the costumes, the buildings, or other parts of the view such dioramas correct in advance erroneous mental images the uninformed viewer might otherwise have.

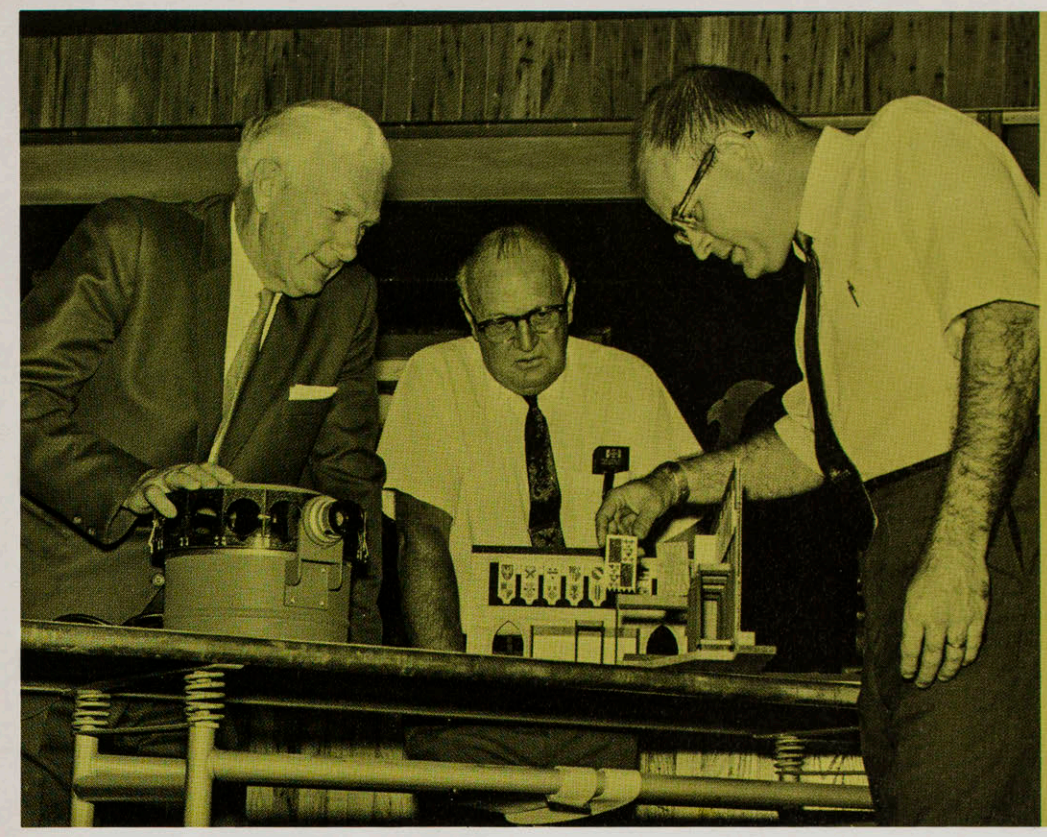
It may be worthwhile to note at this point a basic educational method of museums. Unlike schools and colleges with their regular classes, quizzes, and assigned readings, museums teach in a more seductive way, luring the learners with the artful wiles of display techniques. Most adult visitors, and children too, if not in organized school groups, come to museums in a state of passive receptivity. They come, not to learn, but to look, and it is the museum's job to turn the looking into learning, to make looking informative and stimulating. In the classroom the presence and the voice of the teacher are inevitable and dominant and even essential as the communicator. In the museum exhibition gallery, the exhibits are the teacher, happily bereft of any semblance of appointed authority.

The gradual recognition of the value of the museums as educational centers has resulted in greater demand for their special kind of service. The museums are constantly reaching out more and more to make their contact with large numbers of people who may seldom even come to them, with television broadcasts, with film programs with educational leaflets, and, getting back to their concern with the real objects, with lending services to the schools and similar organizations.

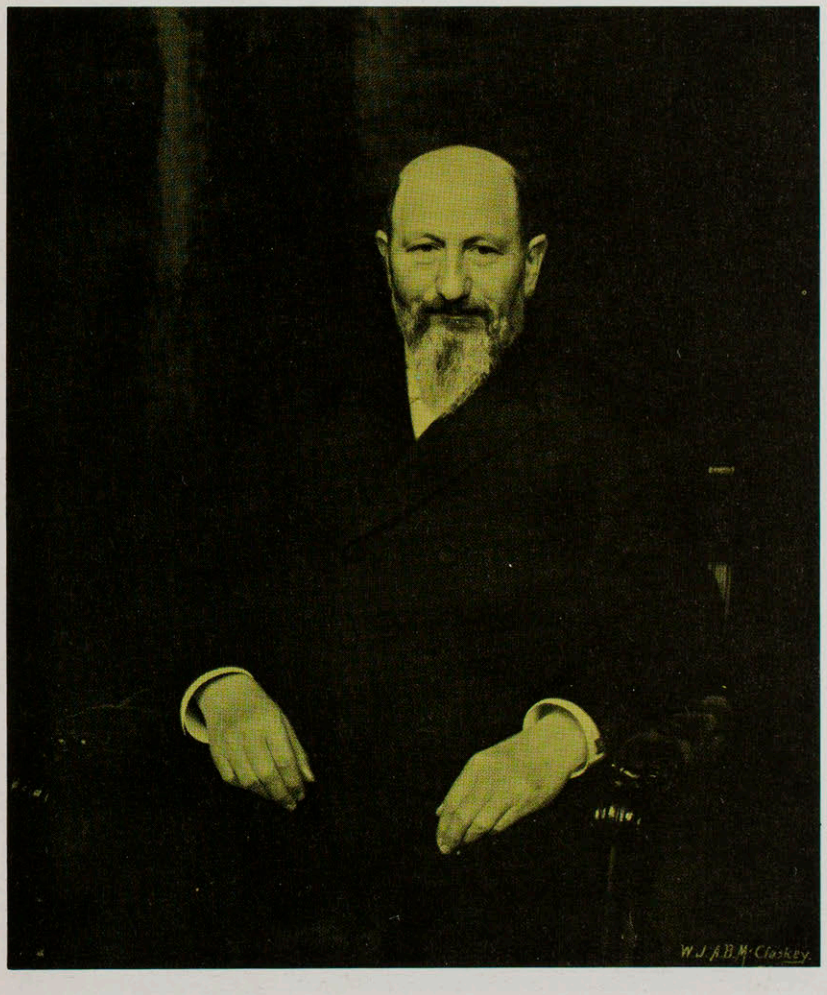
Museums are trying many methods of increasing and improving their presentations. The use of sound, especially of taped recorded talks designed to enlarge upon the text of the labels is one of these. In some cases exposure over the years to television has also had the effect of making a one-sensoried approach seem inadequate; sight without sound becomes something like watching reruns of old silent films.

The basic educational aim of museums it to help the visitor to accept an involvement with unfamiliar and even alien things, or to enchance his preexisting awareness of more familiar ones. The presence of collections of real objects is the museums' special arsenal of potential learning with which they can make their penetrating, if quiet and seemingly passive, assault on the receptive, if not always prepared and eager, minds of the viewers. The museums' role in education is to renew and to enlarge the visitor's involvement with as many aspects of the sensible world as possible in the expectation that this will, in turn, enchance his awareness of and concern for, the intellectual world. To aid in this process the museums must permit presentation to take over from mere representation wherever possible.

Mrs. Janet Cornyn, guides a class past the Touchstone in the lobby of the Museum.



Conference on design of the Arms and Armor Hall. (reading l. to r.) Russell Smith, Chief, Education Division, Ken Hooker, Head Museum Preparator in Exhibitions, and Russell E. Belous, Curator of Western History, discuss placement of a film projector in the gallery.



Portraits in the California History Hall. Harris Newmark (1834-1916), oil painting by W. J. and A. B. McClosky, 1895.

Illustration by Frank Page

by **J. R. Macdonald**
Senior Curator of Vertebrate
Paleontology

With the space age a reality and serious scientists wondering whether thousands or millions of planets throughout the galaxies may support intelligent life, perhaps we should examine the possible forms this intelligent life might take. Heretofore, it has been mainly the science-fiction writer who has populated these planets. If you are a science-fiction fan, you get the impression that there is a universe full of planets waiting to be populated, and a planet full of science-fiction writers who are all too willing and eager to fill them. It seems strange that, in spite of the current trend for exactness and a firm scientific premise upon which to base the physical phenomena described in current science-fiction, relatively little thoughtful attention is paid to the scientific populating of far away places.

Planet-peoplers seem to fall into three main groups: 1) the Special-creationists; 2) the Anthropomorphists; and 3) the Pull-out-all-the-stops-and-let-her-rip-ists. There are the usual variations, but in the main, most of them can be identified generically with one of these groups.

The Special-creationist is the least scientific of the lot. He probably lacks real imagination, denies evolution, or at least belongs to the school that refuses to accept man as a home grown evolutionary product. He is the author who sows MAN on earth from some distant place during some past geologic epoch, either by divine act or in some way left deliberately unexplained. MAN generally arrives from Mars, Venus, or Way-out-thataway. He may even populate the whole system with human wanderers from a Somewhere-out-yonder, which yonder may be either spatial or temporal.

The Anthropomorphist is blinded by the beauty of his own body and the requirements of a plot that needs an exotic female creature to do the things to or for the hero that exotic female creatures have done to or for heroes since the first tale was told. There is really no great harm done by this type of populator as he puts the Special-creationist in his place by producing human-like beings through many local evolutionary processes. This is, of course, generally by implication, but there have been stories of Cat people, Bird people

and so forth. Here again we come upon a scientific premise that isn't tenable, but at least the intentions are of the best.

Strange as it may seem, the most sensible school is probably represented by the Pull-out-all-the-stops-and-let-her-rip group. While not realizing it, they actually are promoting a concept of the very **randomness** of Nature which, with selective pressure toward adaptation, has been the foundation of almost all evolutionary development.

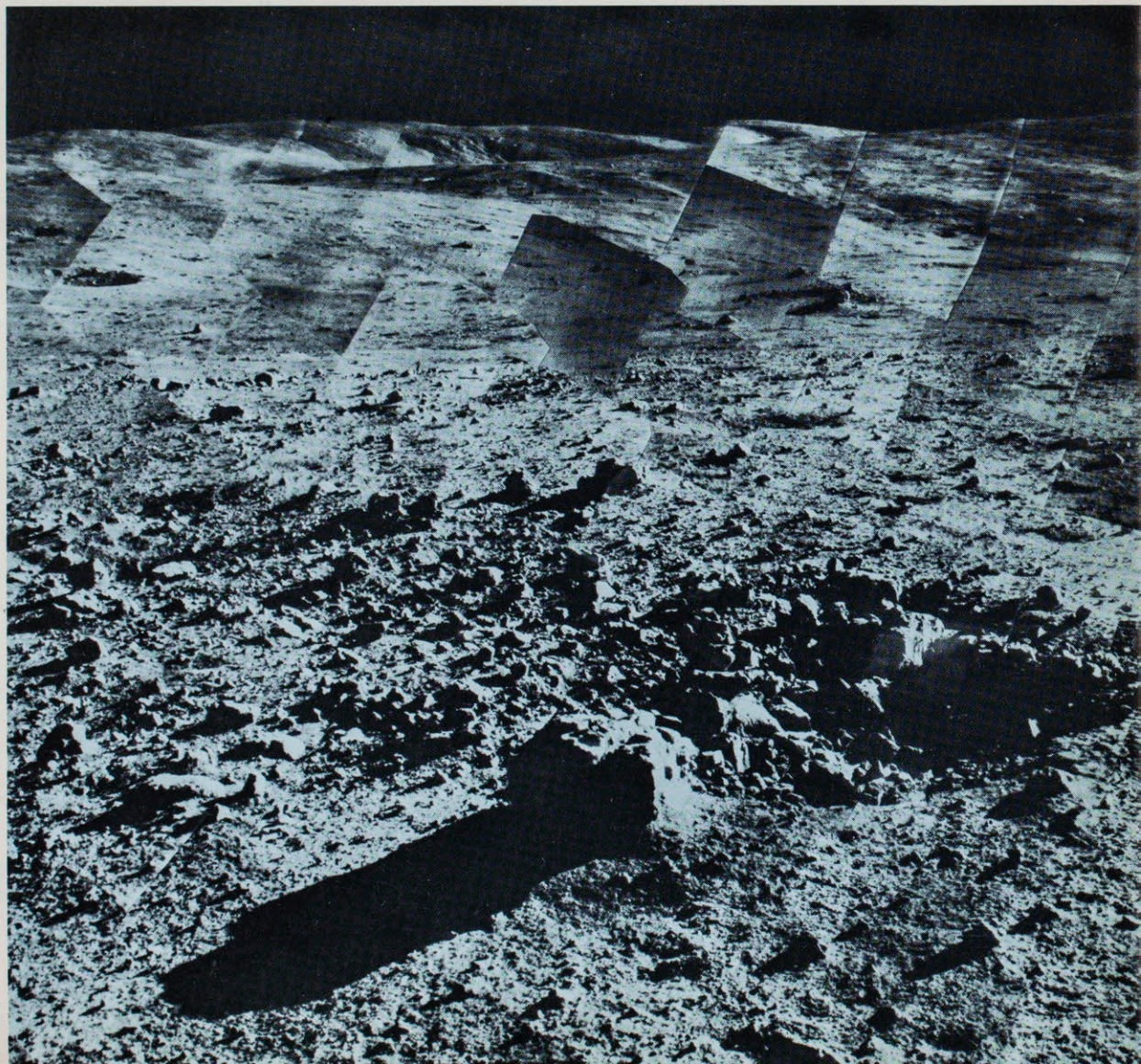
If our current interpretation of the evolutionary mechanism is correct, the author should design his people to fit or nearly fit the conditions of the planet. There is no reason for sentiment or highly intelligent beings to conform to any known standard of terrestrial design if their evolution did not take place upon this world.

To understand more fully the state of our knowledge of evolution, it might be well to take a quick look at the types of people involved in the search for the final answers. Our understanding of the inner workings of evolution and the development of life has come a long way in the last one hundred and fifty years. In the last portion of this period, a joining of the forces of the various scientific disciplines has produced marked results, and the core of the problem is being rapidly exposed. This doesn't imply that we are reaching a full understanding of the evolutionary problem; it simply means that we are beginning to see what the problems are. The geneticist and the palentologist have joined the biologist, biochemist, zoologist and the botanist in a series of factually interpretive unions that permit the basic problem to be attacked from all sides.

The Why of the origin of life is outside the scope of most of these investigations. That is the special province of the biochemist or possibly the theologist. To attack the problem of evolution, we must have something that we can see and work with, in other words "Life" in reasonably-sized units. Also, if we are attacking the problem from all sides, we should have both living forms and the fossil remains of "animals" and "plants" that lived in the past.

The geneticist with his **Dropsohila** or his sunflowers slowly plots the changes causes by the recombination of genes, the breaking up and the realigning of chromosomes and the steady flow of mutations. This painstaking work is gradually revealing the fundamentals or building blocks of evolution. Without it there can be no pattern and, in spite of the cries of those who can see no connection between themselves and a Fruit Fly, it is this work which unites the efforts of the other sciences that have been drawn into the study of the constant change and development of life.

Possibly we should have started with the paleontologist who started all of this fuss in the first place. It was the bone digger who, with the comparative ana-



Spherical mosaic of pictures of the moon taken by Surveyor VII's television camera forms a panoramic view of the lunar terrain northeast of the spacecraft.

tomist (actually in the beginning they were often one and the same), first kicked over the apple cart and pointed out that life hadn't always been as it is today and that perhaps there was room for a little investigation. The paleontologist is really the only one who sees evolution on a grand and graphic scale. The animals or plants which he recovers from successive strata of the earth's crust reveal the long and complex series of changes that went into the building up of our living flora and fauna. Each year more and more fossil remains are found by diggers. These add more and more knowledge of the changes that have taken place during the long past and more of the slow progress of adaptation is revealed. Despite all of this information, the "How" cannot be answered by the paleontologist. He can contribute only the "What." The "Howii is a group problem.

Throughout the work of these various groups, each science is kept on the track by the constructive criticism of the others. When the geneticist wants to create new species through a single step by macromutation or saltation, it is the paleontologist who must stop him. He points out that, in the past, the characters that add up to a new type of life or species appear long before they are useful, and they are slowly spread through populations, possibly as recessives. These are carried around as excess and sometimes unhandy baggage until the time comes when they can be used, or else they so load down the animal or plant that it becomes extinct as it is too inflexible to meet the new demands of changing conditions. An example could be cited of the case of a simple but important flexure on the upper cheek teeth of the fossil horse, **Parahippus.** This horse broke the ground for the development of the grass eating grazing horses when the "universal forests" began to retreat some 22-3 million years ago. One of the world's leading geneticists, who was a saltationist, cited the appearance of this "crochet" as a macro-mutation. However, the fossil record indicated that this character had appeared in occasional individuals of the preceeding browsing horses for millions of years.

But again the geneticist sets the paleontologist on the right track by waving the standard of randomness, as the paleontologist is liable, through his studies of long and continuous phylogenies, to forget the side branches, the sudden rushes forward and the long periods of marking time with their attendant development of exploratory forms which are destined to become failures. If he forgets these things and uses only the clarity of hindsight he becomes involved in vain speculations on predestination and orthogenesis. He sees the horse developing in a straight line from a small multi-toed browser into a large single-toed grazer and completely forgets the many, many horses that diverged from this line. In fact, it was a side branch from the logical development of the horses into large, three-toed forest dwellers that, through survival and adaptation, became the horse that we know today . . . because some of its non-conforming ancestors happened to be at the right place at the right time with a couple of extra characteristics on hand, a phenomenon conveniently expressed as "preadaptation."

The geneticist and the paleontologist try to reach an understanding, which is sometimes difficult, as the former sees the machinery and not the results, and the latter's stock-in-trade is the study of the various stages of development and the current end product. The zoologist, the systematist and the botanist also add their bit to the picture. With these additions and in recent years a big boost from the biochemists with their DNA and other juices, the various ingredients begin to blend into a workable synthesis.

It is here, through the combined efforts of the students of living organisms, that the big picture can be rounded out. It is here that the mutations and the recombinations observed by the geneticist are put into living populations. These, in turn, through isolation and environmental pressures (natural selection) are molded into new species which are the building blocks of evolutionary change. These are the life forms which form the fossils the paleontologist collects and uses to demonstrate the fact, that given enough time, almost anything can be developed.

Briefly, the complex business of evolution can be boiled down to a few important factors:

1) We must have life of some kind, originate it as you will. Aside from its simplest forms, it should have some sort of sexual reproduction or at least an occasional interchange of germ plasm to enhance the scope of variations, the material on which natural selection operates.

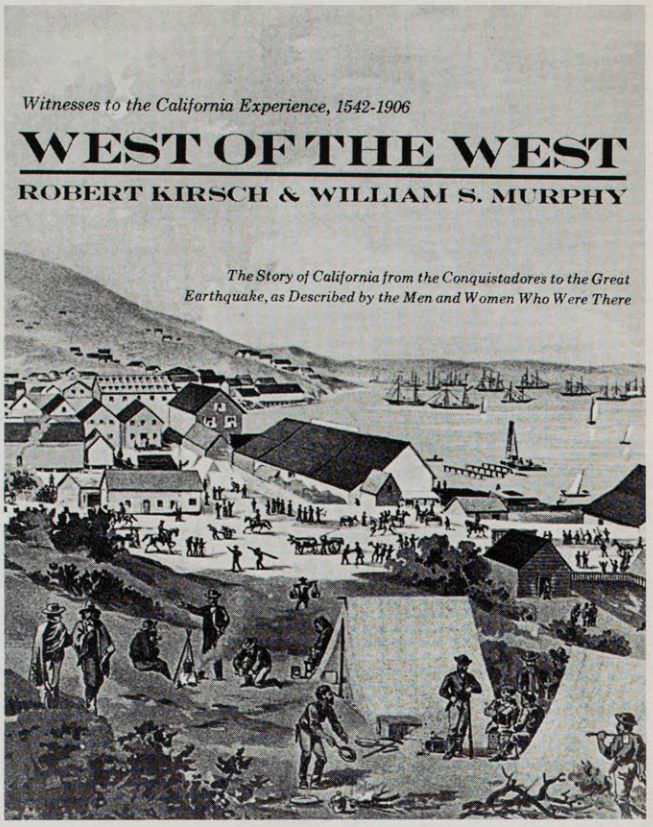
2) We must have mutations, preferably minor ones that will not upset the balance of the population or leave the mutant walking around without a genetically compatible mate. (Authors who derive new supermen from A-, H-, or Q-bombings, please note that minor radiation mutations are acceptable but let's not get carried away with completely new genetic patterns and expect the new form to find a mate who will produce viable and fertile offspring.)

3) We must have Time in great quantities so that selection may bring about adaptation through a slow screening of the many mutations that can occur during a large piece of time.

Given a population of Something, we find that it will either remain genetically stable or develop and carry a lot of minor mutations that are not particularly harmful or helpful. Through time, the population will drift genetically if it has mutations but no particular pressures, or it may be subjected to selective pressures which will cause either slow evolution or extinction. If the population does not already have the right mutations in its makeup it will not adapt to the new conditions. Mutations can be caused, but they are not made to order or specification in order to meet a particular situation.

Through this process, any sort of an intelligent life form with a high intellectual level could be developed. There is no limit to the number of basic designs that could evolve on other worlds. Just because **our** fundamental pattern goes back to some of the ancient fishes it doesn't follow that other intellectual life forms have to follow the same pattern. The odds are in favor of their ancestral "fish" being quite different from ours and it would be stretching the arm of coincidence a long way if we were to expect any other world to have a population resembling our own.

MUSEUM BOOK STORE


Witnesses to the California Experience, 1542-1906
WEST OF THE WEST
ROBERT KIRSCH & WILLIAM S. MURPHY
The Story of California from the Conquistadores to the Great Earthquake, as Described by the Men and Women Who Were There

West of the West

West of the West, by Robert Kirsch and William Murphy (E. P. Dutton & Co., Inc.: New York; 1967; $10.00)

Burt Reiner
History Division

The unusual title of this unusual anthology is derived from a poem by Robinson Jeffers. At the very outset, then, authors Robert Kirsch and William Murphy give notice that they are familiar with the best literature California has inspired. As it turns out, it is not their intention to exhibit a sampling of California's elite. This service has been rendered by others, most recently and memorably by John and LaRee Caughey in their excellent compilation, **California Heritage.** On the contrary, the co-editors have adhered to the criterion of raw immediacy in making their selection for inclusion. **West of the West** is really history set forth as journalism, and this procedure is perhaps only natural since both Kirsch and Murphy are experienced journalists themselves. It is a method that works, however; and one that makes the history of California come alive in a way that must be read to be appreciated.

The volume is a living newspaper of over 500 pages, including generous sections of illustrative material. The historical archives of the Los Angeles County Museum of Natural History itself were tapped for several fine halftones. Murphy, a veteran photographer as well as author, knows the value, and is a long time advocate of the camera eye as a documentary tool. Other graphic aids—maps and drawings—augment the book's usefulness, as does a surprisingly extensive bibliography. The student of California history should feel confident in the scholarship and authenticity of the book, even as he will no doubt be grateful for its readability (it would make an excellent adjunct to the standard classroom texts).

The real treasure of this anthological goldmine is the many eye-witness accounts—some very rare ones included—deposited by those who recorded their firsthand impressions during a four-century span. As announced in their preface, the emphasis throughout is "on witness, direct, proximate, and frequently unadorned." In short, those that were there tell it as it was; and, as if by magic, you are there, too.

A curious impression emerged after reading this topical presentation of California history. One could not help but be aware of the tremendous amount of violent activity which erupts regularly throughout the chronicle. Except for a brief and lyrical epilogue, the book ends with a catastrophic rumble in the re-creation of the great San Francisco earthquake of 1906. But, in truth, most of the chapters feature personal, social, and natural upheaval. It might have been more descriptive to have taken the title of this exciting book from Jeffers' lines that follow "west of the west": "And the west wind/Blows and throws with the landward spray/Dreams on our minds, and a dreamy unrest." Chapter headings reflect this "unrest" very well: "The Corsairs in the Pacific"; "Peter Corney's Narrative"; "John Charles Fremont and the Conquest of California"; Vigilante Justice and Violence"; "The Turbulent Seventies"; "The Modoc War"; "War With the Railroad." These are only the more blatant accounts of the restlessness and ruthlessness which have characterized the Golden State's past.

As a moderating counterpoint to such harsh trumpet blasts of war and discord, Messrs. Kirsch and Murphy have written with informed sympathy of the land and its original inhabitants. In their introduction they write beautifully of the California Indians who, while they left no written record, were "people of the dream," even as their eventual supplanters.

In the concluding pages the authors demonstrate a nice sensitivity that adds the right touch of historical perspective and rounds off the book with eloquence. There, they briefly recount the bittersweet life of Ishi, the Yahi Indian, who "symbolized the other side of man's nature, the willingness to blend and harmonize with the demands of terrain and landscape." By referring to this wonderful and true story of the last survivor of California's first people, the authors show an uncommon feel for the ironical aspects of history.

MUSEUM SPOTLIGHT

Russell J. Smith Retires

Russell J. Smith, Chief of the Museum Education Division, retired on June 10th after 37 years of service, all of them devoted to building one of the finest Museum Education Departments in the country.

Mr. Smith obtained his A.B. and M.A. in Biology at U.S.C. and then, as he put it, " . . . came across the street where I've been ever since." That was in 1931 and Mr. Smith began as Curator of the Junior Museum.

Starting in the basement of the original Museum building Mr. Smith, with one helper, built the Junior Museum with stamp collections, coin collections, doll collections (Shirley Temple, Jane Withers, Colleen Moore, etc.), exhibits from Russia, South America, the Mediterranean area, small mammals, science and history exhibits, and one of the first programmed learning exhibits.

When the Junior Museum was abandoned as a baby-sitting operation, a legitimate Education Division was established with Mr. Smith as its head.

In those days Mr. Smith personally guided most of the school classes, recruiting what curators he could entice away from research duties to assist him and enduring resistance aimed at the invasion of school children into the Museum. The touring of school children in the Museum is now an established Museum practice and is one of the jewels in its crown of community service. The program has its Appointments Secretary, staff of guides and volunteer docent guides, and in the Past Season toured **4,000** classes of 140,000 children.

The Lending Service of Museum materials is another of Mr. Smith's brain children, using surplus Museum material, small mammals, models, and specially purchased material, circulating exhibits that would not otherwise be available to children. Of the 42 school districts in Los Angeles County, in the past year 27 had basic units of material, each lending unit comprised of 300 items. With this service the Museum is carried into the community and gains recognition since each unit bears the Museum's name. Each borrowing school district pays $300 to help in maintenance and to expand the collections. The exhibits come back to the Museum on a two year schedule for refurbishment and additions.

Mr. Smith founded the Documentary Film Series which now shows at 28 county locations seven months of the year to 25,000 people a season. He also was the generative and directing force of the Museum's Sunday Chamber Music Concerts begun as a cultural and history adjunct which have continued Sundays for the past twenty years, broadcasting over KFAC FM-AM to an estimated audience of 100,000 each week.

The Science Workshop and History Workshop classes were developed under Mr. Smith. These Saturday classes enroll only the top high school scholars in science and history and have been helpful in furthering the careers of talented children in these fields.

His own works praise him; and the rest of us benefit; but beyond that the circumstances of Mr. Smith's retirement remove some of its sting. He has retired early to pursue personal interests in the general field of audio-visual education; but, additionally for the Museum, he has accepted an appointment by Dr. Herbert Friedmann, Director of the Museum, as an Associate in Education at the Museum and will continue as advisor to the Education Division, and as an active member of the Museum Alliance.

We have not lost a Chief, we have gained another Indian, and a very helpful Indian, at that.

New Chief of Education

Richard Lipscomb has been appointed Chief of the Museum's Education Division to succeed Russell Smith who retired from that post in June.

Mr. Lipscomb is a graduate of Tulane University where he received his B.A. degree in English and of Cornell University where he received the A.M. degree in Dramatic Production and Dramatic Literature.

He was Assistant Professor of Speech and Director of the Theatre at the University of Alabama and Associate Professor of Drama at the University of Texas. He was Assistant Producer and Head of Research for the CBS-TV history series "You Are There" and a motion picture, television and newspaper writer.

For the past four years he has been a Museum Education Specialist at the Museum concerned principally with the Chamber Music series, the Documentary and Summer Film series, and the Museum's public relations program.

Mr. Lipscomb's wife, Lois, is connected with Berkeley Hall School in Beverly Hills and they have two children, Peter, 11, and Geoffrey, 9.

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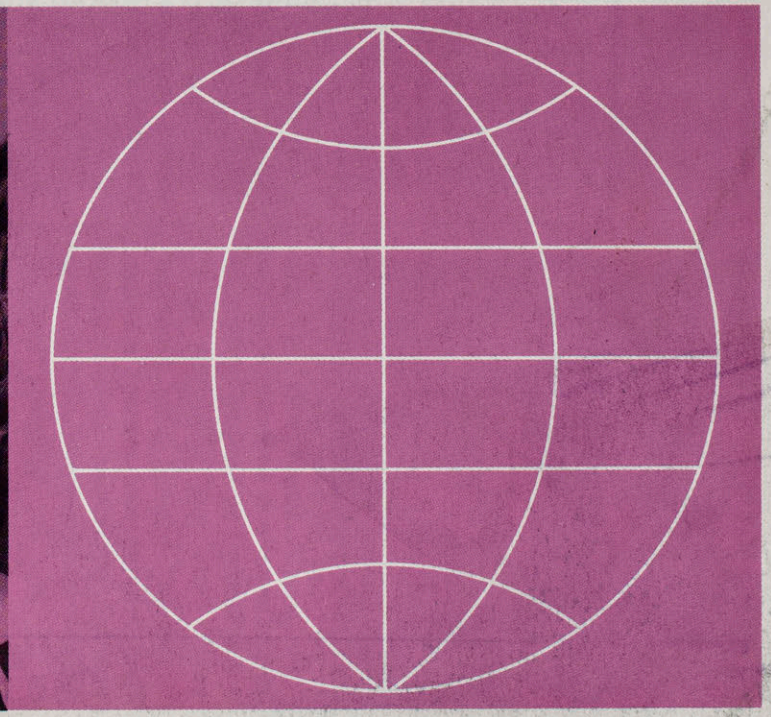
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